

1 Larry A. Hammond, 004049
2 Anne M. Chapman, 025965
3 OSBORN MALEDON, P.A.
4 2929 N. Central Avenue, 21st Floor
5 Phoenix, Arizona 85012-2793
6 (602) 640-9000
7 lhammond@omlaw.com
8 achapman@omlaw.com

9 John M. Sears, 005617
10 P.O. Box 4080
11 Prescott, Arizona 86302
12 (928) 778-5208
13 John.Sears@azbar.org

14 Attorneys for Defendant

SUPERIOR COURT
YAVAPAI COUNTY, ARIZONA

2009 DEC 22 PM 2:20 ✓

S Smisko

11 IN THE SUPERIOR COURT OF THE STATE OF ARIZONA

12 IN AND FOR THE COUNTY OF YAVAPAI

13 STATE OF ARIZONA,

14 Plaintiff,

15 vs.

16 STEVEN CARROLL DEMOCKER,

17 Defendant.

) No. P1300CR20081339

) Div. 6

) **DEFENDANT'S MOTION TO**
) **DISMISS OR IN THE**
) **ALTERNATIVE FOR A WILLITS**
) **INSTRUCTION**

) **(Oral Argument and Evidentiary**
) **Hearing Requested)**

20
21 Defendant Steven DeMocker, by and through his counsel, hereby moves this
22 Court for an Order dismissing this matter with prejudice, or in the alternative, for a
23 *Willits* jury instruction, with respect to the failure of police to preserve evidence in the
24 nature of bicycle tire and shoe print impressions. This motion is supported by the files
25 and records in this case, and the following Memorandum of Points and Authorities.
26 Defendant requests oral argument and an evidentiary hearing on this motion.
27
28

MEMORANDUM OF POINTS AND AUTHORITIES

In the watershed case of *State v. Willits*, 96 Ariz. 184, 393 P.2d 274 (1964), the Arizona Supreme Court held that a special jury instruction is appropriate when the State destroys or loses evidence potentially helpful to the Defendant. *See State v. Murray*, 184 Ariz. 9, 33, 906 P.2d 542, 566 (1995). However, "[d]estruction or nonretention [sic] of evidence does not automatically entitle a defendant to a *Willits* instruction." *Id.* To merit the instruction, a Defendant must show "(1) that the State failed to preserve material and reasonably accessible evidence having a tendency to exonerate him, and (2) that this failure resulted in prejudice." *Id.* Subsequently, if a Defendant shows the State had acted in bad faith in failing to preserve the evidence, dismissal was found to be the appropriate remedy. *Arizona v. Youngblood*, 488 U.S. at 57-58, 109 S.Ct. at 337, 102 L.Ed.2d at 289; *State v. Youngblood*, 173 Ariz. at 508, 844 P.2d at 1158. In the due process context, a determination of bad faith "must necessarily turn on the police's knowledge of the exculpatory value of the evidence at the time it was lost or destroyed." *State v. Walker*, 185 Ariz. 228, 238, 914 P.2d 1320, 1330 (App. 1995), quoting *Arizona v. Youngblood*, 488 U.S. at 56 n., 109 S.Ct. at 336, 102 L.Ed.2d at 288; *see also State v. Dunlap*, 187 Ariz. 441, 452, 930 P.2d 517, 528 (App. 1996) (State must preserve only evidence that could be expected to have significance in suspect's defense).

At the hearing on this motion, the evidence will show that deputies and detectives from the Yavapai County Sheriff's Office located bicycle tire and shoe print impressions on open land adjacent to the residence where the victim's body was

1 discovered within hours after their investigation began. Believing that they had been
2 made by Defendant, the police made efforts to secure the scene, and when the sun came
3 up the following day, undertook to track, flag and photograph those impressions. They
4 did not employ proper forensic photographic techniques, however, and as a result the
5 DPS criminalist asked to analyze those impressions was unable to reach any conclusions
6 beyond the fact that the tire impressions "appeared similar" to impressions made by
7 tires on Defendant's bicycle. Further, the police made no effort to cast or otherwise
8 permanently preserve any of the tire or shoeprint impressions, making it impossible for
9 the defense to independently test or examine that physical evidence. Interestingly, the
10 State has disclosed to the defense in this case portions of a DPS protocol which describe
11 in detail how to forensically photograph and preserve impression evince like that in this
12 case. At interview, the police freely admitted that they had not been trained in these
13 techniques and that they made no effort to preserve the evidence beyond the
14 unprofessional and utterly inadequate photographs they took, and a crude and
15 admittedly inaccurate effort to map the tracks using a hand-held GPS device. A copy of
16 that DPS protocol is attached hereto as Exhibit A.

17 In addition, the police failed to search any other portions of the surrounding open
18 area to look for additional impressions that might have related in some way to the ones
19 they were focused upon. By the time detectives returned to the scene a few days later,
20 the impressions had been destroyed by the summer rains.

21 We know now from the discovery in this case that none of the shoeprint
22
23
24
25
26
27
28

1 impressions matched any shoe associated with Mr. DeMocker, but the defense will
2 never be able to investigate those impressions as a result of the willful failure of the
3 police to take the simple steps necessary to preserve them. Proper forensic investigation
4 would have resulted in usable reproductions of this important evidence, and the failure
5 to do so is both inexcusable in a homicide case and prejudicial to the defense. The
6 police must be held accountable for their conduct in this regard. In short, the detectives
7 and the deputies seemingly did not care about this case, and their sloppy and
8 unprofessional work underscores that fact. Now, Defendant is unable to reconstruct the
9 scene to demonstrate that these impressions are not related to him and are exculpatory.
10 The hearing will establish that the police acted willfully and intentionally, and that they
11 acted in bad faith.
12
13
14

15 CONCLUSION

16 Defendant Steven DeMocker, by and through counsel, hereby requests that this
17 Court enter an Order an Order dismissing this matter with prejudice, or in the
18 alternative, granting him a *Willits* jury instruction,

19 DATED this 22 day of December, 2009.

20
21 By: _____

22 John M. Sears
23 P.O. Box 4080
24 Prescott, Arizona 86302

25 OSBORN MALEDON, P.A.
26 Larry A. Hammond
27 Anne M. Chapman
28 2929 N. Central Avenue, Suite 2100
Phoenix, Arizona 85012-2793

Attorneys for Defendant

1 **ORIGINAL** of the foregoing
2 filed this 22nd day
3 of December, 2009, with:

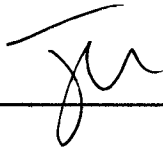
4 Jeanne Hicks
5 Clerk of the Court
6 Yavapai County Superior Court
7 120 S. Cortez
8 Prescott, AZ 86303

9 **COPIES** of the foregoing delivered
10 this 22nd day of December, 2009, to:

11 The Hon. Thomas B. Lindberg
12 Judge of the Superior Court
13 Division Six
14 120 S. Cortez
15 Prescott, AZ 86303

16 Joseph C. Butner, Esq.
17 Yavapai County Attorney
18 Prescott courthouse basket

19
20
21
22
23
24
25
26
27
28



< COPY >


	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU		
	TRACE EVIDENCE		
FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1			
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08	

TABLE OF CONTENTS

1.0 Introduction	2
2.0 General Considerations	2
3.0 Safety Considerations	2
4.0 Photography	3
5.0 Trace Evidence Considerations	5
6.0 Two-Dimensional Prints	5
7.0 Three-dimensional Impressions	8
8.0 Image Enhancement	9
9.0 Known Standards	9
10.0 SICAR with Solemate and Treadmate database	14
11.0 Comparisons	14
12.0 Recommended verbiage:	15
13.0 Minimum Standards and Controls	16
14.0 References	20
15.0 Revision History	21

ALL PRINTED COPIES ARE UNCONTROLLED	Page 1 of 21
-------------------------------------	--------------

013206

013206



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU

TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.I

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

1.0 Introduction

The purpose of this document is to set forth guidelines for the forensic identification and comparison of footwear and tire track evidence.

2.0 General Considerations

All cases are unique and require evaluation and assessment prior to any analysis. The examiner should be familiar with the training manual (Recommended Course of Study for Footwear and Tire Track Examiners, IAI, 1995), the listed references, and the specific procedures utilized before an analysis is performed on any case. For patterns submitted to the laboratory, the Scientific Examination Request for each case should be read thoroughly in order to clearly understand what type of examination has been requested and to determine if any precautions are necessary, e.g., the case may include biologically hazardous materials, etc.

These procedures describe the methods, processes, and techniques that are routinely used in the examination of evidence, but cannot address each and every situation or type of evidence encountered. The individual examiner must exercise sound judgment in selecting the methods that will best suit the requirements of the evidence submitted for a specific case.

3.0 Safety Considerations


- Wear personal protective equipment such as gloves, laboratory coats, eye protection, etc., when handling any chemicals.
- Make sure that all engineering controls such as ventilation hoods, explosion proof cabinets, etc., are used properly; and refer to the Material and Safety Data Sheets on specific chemical handling and disposal procedure.
- Use specific safety practices regarding personal protective equipment and work practice controls as outlined within each processing technique.
- Use safety practices regarding biohazards, chemical disposal, etc., as outlined in the Scientific Analysis Bureau's Chemical Hygiene Plan.
- Use Scientific Analysis Bureau Safety Manual for additional information.

ALL PRINTED COPIES ARE UNCONTROLLED

Page 2 of 21

013207

013207

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU		
	TRACE EVIDENCE		
	FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1		
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08	

4.0 Photography

- General crime scene photographs of prints/impressions should include close-range and mid-range photographs. The photographs should show the relationship of the prints/impressions to the surrounding area. General crime scene photographs are not suitable for footwear and tire track comparisons.
- Comparison quality photographs should be taken directly over the prints/impressions using a tripod and lighting. The film plane of the camera needs to be parallel to the plane of the print/impression. A scale needs to be in every photograph. The purpose of these detailed photographs is to enlarge to natural (one-to-one life scale) size.
- Both general scene photographs and comparison quality photographs are used for the purpose of footwear and tire track examination and comparison.

4.1 Recommended Equipment

- SLR camera, 35mm or digital, with interchangeable lenses, manual override for exposure and focus, off-camera flash and remote shutter capability, and tripod. A medium or large format camera may also be used; the use of "point-and-shoot" style compact cameras is discouraged
- Remote shutter release
- Tripod capable of various angles and positions
- Dedicated electronic flash with extension cable for off-camera operation
- Artificial light sources (e.g., floodlights, flashlights)
- Leveling device (e.g. bubble device, angle/level finder)
- A variety of black-and-white, color negative film and flash cards
- Appropriate scales
- Photographic log, if needed
- Reflector, if needed
- Device for blocking ambient light

4.2 Documentation of Footwear Patterns

Footwear patterns must be adequately documented prior to attempting to remove them from the crime scene. Documentation can include photography, videography, casting, notes and sketching. Proper documentation must also precede any attempt at enhancement. If the footwear pattern can be safely removed from the crime scene without altering the pattern, it should be brought to the laboratory for further examination. Enhancement of patterns is much more easily controlled under laboratory conditions compared to a crime scene. Examination quality photographs must be taken at the crime scene and prior to any casting.

General photography guidelines include the following:

- Use a high quality camera - see Recommended Equipment, Section 4.1

ALL PRINTED COPIES ARE UNCONTROLLED	Page 3 of 21
-------------------------------------	--------------

013208

013208



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #. 1 (first as stand-alone document)
Effective: 8/26/08

- If applicable, use a fine grained film. Black and white film is sufficient; however, use both color and black-and-white, if possible.
- The use of a tripod is required.
- Ensure that the camera is parallel to the surface on which the questioned pattern is located. Use a bubble device or an angle/level finder to confirm the camera position in both dimensions.
- Attempt to fill the field of view of the camera with the image of the questioned pattern, but to include the identifying marker and the scale.
- Photograph the pattern with a good quality scale present. If the pattern is depressed in the substrate, the scale must be placed at the same plane as the impression. A label with the item number and the date should be included in the photograph.
- Control the lighting conditions and determine the proper exposure. One photograph should be taken at the nominal value, as well as one and two f / stops above and below the nominal exposure, if needed.
- Oblique flash is required to better capture detail. The flash should be held at up to 45 degrees above the impression surface. Photographs should be taken with the flash at least three different locations (12, 3 and 8 o'clock). The use of a 1/4 inch vertical pin extending up from the scale will permit the duplication of the flash position with test prints, if needed.
- Once the impressions have been adequately photographed, the examiner may proceed to other processes. Once the patterns have been labeled with item numbers, it may be useful to photograph the overall area to show the relationship between the patterns and the remainder of the crime scene. The photograph should be done for an overview of the scene and some closer views of the patterns (not for comparison purposes) so that the pattern numbers can be read.
- If the impression is in soil, mud or snow it should be cast.

4.3 Documentation of Tire Tracks

Tire tracks can be documented or cast in the same manner as footwear impressions (see the footwear section of this manual). Due to the length of some tire tracks, numerous photographs are needed to document the entire length. The only additional requirement would be to place a tape measure along the side of the track so the photographs produced can be reassembled at the laboratory in the correct order. Prior to casting a tire track, the track should be examined for any trace evidence. When making a cast of a tire track, it is important to mark the casts in sequence so that they can be reassembled later.

The following measurements should be made when possible:


- **Wheelbase Measurements:**
The wheelbase is the shortest distance between the center of the front and rear axles of the vehicle.
- **Front and Rear Tire Track Widths:**
This is the shortest distance between the centers of the tires from one side of the vehicle to the other (passenger side to driver's side). Exact directions for measurement can be obtained from examination of a vehicle.

ALL PRINTED COPIES ARE UNCONTROLLED

Page 4 of 21

013209

013209

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU		
	TRACE EVIDENCE		
	FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1		
	Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08

The following information should be collected from the vehicle and documented:

- Year
- Make
- Model
- Vehicle Identification Number (VIN)
- Wheelbase, if needed
- Tires specifications (make, model, manufacturer)
- Front and rear tire dimension, if needed

5.0 Trace Evidence Considerations

Trace evidence should be documented via photography and recovered prior to any enhancement. A portion of the material that the questioned pattern is made of may have to be preserved for other types of examination. Occasionally, it will be necessary to decide which of two (or more) procedures may produce the more valuable findings, i.e., the possibility of enhancing prints to positively identify a shoe/tire versus the potential value of serological or trace findings. Considerable thought should be given to the area of the pattern from which the biological samples are removed. An area that may possess fine detail should not be altered. Those areas that are caked with blood and have no potential for finding such features should be sampled. Each case must be considered on its own merits. Other types of materials, such as dust, may also be important in terms of composition. Additional trace evidence, such as hair, fiber, paint chips, glass particles, etc., adhering to the surface may be important to the case and must be documented, collected and preserved.

6.0 Two-Dimensional Prints

Two-dimensional prints are those prints, which for practical purposes, have the dimensions of length and width, but not a significant depth.

6.1 Procedure

The procedure for examining two-dimensional prints already preserved at the crime scene usually involves photographs, gelatin lifts, tape lifts or the evidence itself. If the evidence requires processing, then the evidence is processed after photography. The processing techniques applied are at the discretion of the examiner, based on sound judgment, experience, and the type of residue and surface of the evidence. The evidence is visually examined, using the appropriate lighting technique, for the presence of identifiable tread pattern. When identifiable tread pattern is visible, the print should be photographed prior to lifting and any additional processing.



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

6.2 Electrostatic Dust Lifter

Electrostatic dust lifters allow for impressions to be lifted from various surfaces and preserved for examination. The electrostatic dust lifter can be used at the crime scene as well as in the laboratory. It is primarily used to lift footwear impressions from doors and evidence that has been stepped on.

6.2.1 Instrumentation

There are several versions of electrostatic dust lifters manufactured by different companies. Most of the units are equipped with a carrying case, capable of storing an adequate supply of lifting film, a roller, flashlight and a measuring device. Some units are smaller hand-held units and are just as effective.

6.2.2 Procedure

- Locate the impression to be lifted.
- Photograph, if visible, with a scale.
- Cut a piece of lifting film that is larger than the impression.
- Place the lifting film over the impression, black side down against the impression, and the metal side will face up.
- Ensure that the unit is properly grounded per the instructions of your particular unit.
- Place the probe on the lifting film to charge the lifting film and, using a roller, smooth the lifting film allowing the film to come in contact with the impression.
- Turn off the unit and wait several seconds for the film to discharge. Remove the film from the evidence by lifting one end and rising to the other end, do not slide.
- Photograph the impressions that are present on the lifting film to preserve the impression. Caution must be exercised when handling and packaging the lifting film to avoid destroying the dust impression.
- If the prints are faint, photography of the lift can enhance and preserve the print using various photographic techniques.

6.3 Powders

Powder application is used to produce or improve the appearance for preservation. The most effective agent in terms of adherence to moisture, non-adherence to dry surfaces, particle size, shape, uniformity, and intensity of color is carbon. Carbon is black, and as a result, black powders which contain carbon will consistently produce the best results. Most commercial black fingerprint powders have a high carbon base. Other colored powders may be required due to the substrate encountered, but should be restricted to absolute necessity.

Magnetic powders are powder-coated, fine iron filings subject to magnetic attraction. These adhere to moisture to a lesser degree than carbon powders, but can be applied with less destructive force to the surface. Fluorescent powders were developed specifically to fluoresce when viewing forensic light sources. Fluorescent powder is used for examination of impressions with forensic light sources and ultraviolet light sources.

ALL PRINTED COPIES ARE UNCONTROLLED

Page 6 of 21

013211

013211



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

6.3.1 Standard Powders

Powders may be applied by various means, but the preferred procedure for most items is the use of a fiber glass/fingerprint brush. Powders are more effective if applied in very small amounts. With the brush handle in a nearly perpendicular position to the surface, the bristle ends are lightly and delicately moved over the surface. Discoloration of the impression residue will usually appear immediately. Extraneous residue on the surface may cause a general painting effect which obscures impression detail. A lift made of the area can sometimes remove the extraneous material and permit a second application of powder. This second application may offer better contrast between the impression and the background.

6.3.2 Magnetic Powders

Magnetic powder must be applied with a magnetic application device. Wands which contain a movable magnet attract the powder when the magnet is depressed and release the powder when it is raised (contact between powder and surface is completed without bristles and is more light and delicate than the brush, less destructive than regular powder/brush). The larger particle size powder has a tendency to paint some surfaces. Excessive powder can sometimes be removed by passing the magnetic wand without powder near the surface. Surface areas examined generally must be processed more slowly with magnetic powders, and great care must be exercised to prevent actual contact between the end of the wand and the surface.

6.4 Chemical Enhancement

Chemicals provide additional methods of enhancement that cannot be successfully or fully enhanced through photographic or physical means. Several formulations (Bodziak, W.J. *Footwear Impression Evidence*, 2nd ed.) exist that are the same or similar to those used to react to substances in blood, to detect trace material and metal ions and to develop latent fingerprints. When selecting enhancement techniques, consideration should always be given to factors such as the surface material, the surface texture and the condition of the print/impression. Where methods are not specified, the laboratory shall, wherever possible, select methods that have been published by reputable technical organizations or in relevant scientific texts or journals or have been appropriately evaluated for specific or unique application.

ALL PRINTED COPIES ARE UNCONTROLLED

Page 7 of 21

013212

013212



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision # 1 (first as stand-alone document)
Effective: 8/26/08

7.0 Three-dimensional Impressions

Three-dimensional impressions are those impressions with the dimension of length, width, and depth.

7.1 Procedure

The procedure for examining three-dimensional impressions already preserved at the crime scene usually involves photography and castings. Casts are photographed after cleaning. The processing techniques used are up to the discretion of the examiner.

7.2 Instrumentation

Light source

Photography/Imaging Equipment

7.3 Casting Impression Using Dental Stone

Dental stone offers a method for casting footwear/tire track impressions in soil, dirt, sand or mud.

- A Mixture of dental stone to water in a zip lock bag or in a plastic container that can be stirred until a pancake batter consistency is achieved (typical cast requires (2) pounds of dental stone and (10-12) ounces of water).
- The mixture needs to blend for at least 2 minutes.
- The mixture is poured at the highest incline area of the impression and onto the poured area allowing the mixture to spread evenly; care must be taken not to pour directly onto the impression.
- Allow the mixture to dry for at least 45 minutes, depending on the condition of the surface.
- Carefully remove the cast and remove gross debris from the cast.
- Cleaning of the cast is performed at least 24 hours after the cast has been removed using water and a soft bristle brush.
- No specific preparations are needed for the other standards as the materials being used are commercially available.

7.4 Casting Impressions in Snow Using Snow Print Wax and Dental Stone

Snow Print Wax offers a method for casting footwear/tire impressions in snow. Follow the step-by-step instructions printed on the aerosol can. Always take general scene and examination quality photographs first.

7.5 Other casting methods

Liquid silicone, waxes, sulfur, etc can be utilized (Bodziak, W.J. *Footwear Impression Evidence*, 2nd ed).

ALL PRINTED COPIES ARE UNCONTROLLED

Page 8 of 21

013213

013213



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

8.0 Image Enhancement

Image processing requires a thorough understanding of the principles of photography. Photographic lighting techniques, filtration, film properties and processing chemical techniques can all be accomplished through digital imaging. The electronic enhancement of the images, once captured, can be done with various types of hardware and software. Currently available software provides many ways to improve contrasts or remove background interference and thereby improve the captured image. Improvements in image storage and output/printing devices have increased the utility of imaging for casework. To be proficient in the use of the imaging equipment available requires the examiner to be familiar with the operations of the hardware and software. To become an expert in its operation requires extensive understanding of the individual system and possible applications through training and experience. When to request image enhancement is at examiner's discretion.

9.0 Known Standards

Test impressions provide a recording of the characteristics present on the outsole of a shoe/tire. The quality of the comparison directly relates to the quality of the known print/impression. There is no single best process, and results depend upon the particular items and conditions of the specific case. Since various techniques are not-destructive and not sequence dependent, the examiner may choose one by personal preference, and continue to apply additional techniques as necessary to maximize results. These variations in processing techniques do not influence the validity of the test procedure. The following list for preparation of footwear standards typifies the techniques available. Prior to obtaining a known print, the shoe or tire needs to be documented. That should include (if observed) color, shoe size, brand name, logo, a general description of the tread pattern/design, manufacturing label and/or DOT numbers.

9.1 Potential Trace Evidence

The shoes/tires should be carefully examined for potential trace evidence (blood, fibers, hairs, paint chips, glass particles, etc.) prior to processing for test prints/exemplars (see protocol Trace Analysis: General Trace Material Search and Recovery). If possible trace material is observed, the examiner should contact the case officer to determine if the trace material is of value or not. Each case must be considered on its own merits. The individual examiner must exercise sound judgment in selecting the methods that will best suit the requirements of the evidence submitted for a specific case.



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

9.2 Shoe Test Print/Exemplar

The known standards must be an exact replication of the outsole of the known shoe or tire to allow for a conclusive examination with the questioned print/impression. The known standards must be free of artifacts that could affect the examination process.

9.2.1 Paper Medium

Assorted office papers in various sizes and colors are used with a powdered, inked or lubricated shoe to provide a quality impression that can be used to make a transparency copy. The shoes can be inked, ink rolled, dusted with powder or applied with lubricant such as petroleum jelly, Vaseline, wax, etc. To ink the outsole, permanent ink of a contrasting color, usually black, is applied to a large ink pad and the shoe outsole is made to contact the ink pad. To ink roll the outsole, fingerprinting ink is rolled on a plate to smooth it out, and then rolled onto the shoe outsole evenly with an ink roller and recorded in the same manner as the permanent ink. To powder the outsole, black fingerprint powder is brushed onto the outsole and the shoe is gently shaken to remove the excess powder. To lubricate the outsole, a dab of lubricant is rubbed on the outsole prior to making a direct contact onto a sheet of paper. The sheet is then dusted with magna/black powder.

9.2.1.1 Procedure

There are two ways the known print can be made:

- The shoe can be placed on the foot and stepped onto the sheet of paper, or
- The shoe can be placed on a shoe iron and the sheet of paper is then rolled onto the sole of the shoe with a clean ink roller. When rolling the sheet of paper onto the sole, avoid stretching and wrinkling the paper which would distort the impression. After the impression is made on the paper, a "fixer" such as a non-aerosol hair spray is applied onto the shoe print to protect the impression.

9.2.2 Low Viscosity Polyvinylsiloxane (Microsil, Forensic Sil, etc.)

Low Viscosity Polyvinylsiloxane is an excellent material for making a three-dimensional impression of the shoe. After the material is applied, it should be spread evenly over the shoe, forcing the material into the design and attempting to avoid any air bubbles or air pockets. When the material is hardened, it can be peeled from the outsole.

9.2.3 Clay or Fine Sand

Soft clay or sand can be used to make shallow test impressions, particularly when attempting to reproduce a particular area of a shoe. The clay or sand should be smooth and free of air bubbles. The impression is made by holding the shoe or wearing the shoe. A silicone release agent can be sprayed on the outsole to prevent the clay from sticking to the outsole. The clay or sand test impression is then photographed properly for comparison purposes.



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

9.2.4 Transparent Gelatin Lifts

A clear gelatin lifter used with a powdered or inked shoe will provide a quality print that can be used as a transparency. The white and black gelatin lifters provide test prints of high contrast. The qualities of the gelatin lifting materials, such as their flexibility and softness, allow for a more thorough recording of the detail of the known footwear. The shoes can be inked, ink rolled or dusted with powder. To ink the outsole, permanent ink of a contrasting color, usually black, is applied to a large ink pad and the shoe outsole is made to contact the ink pad. To ink roll the outsole, fingerprinting ink is rolled on a plate to smooth it out, and then rolled onto the shoe outsole evenly with an ink roller and recorded in the same manner as the permanent ink. To powder the outsole, black fingerprint powder is brushed onto the outsole and the shoe is gently shaken to remove the excess powder. The gel lifters come with a transparent protective cover that is removed when the print is ready to be made.

9.2.4.1 Procedure

There are three ways the known print can be made:


- The shoe can be placed on the foot and stepped onto the gel,
- The shoe can be placed on a shoe iron and the gel is then rolled onto the sole of the shoe with a clean ink roller, or
- The shoe can be rolled by hand onto the gel. When rolling the gel onto the sole, avoid stretching the gel which would distort the print. After the print is made on the gel, the transparent sheet of plastic is placed back onto the gel to protect the print. Start at the bottom, match the plastic bottom edge with the gel bottom edge and carefully roll the sheet over the gel. It is important to keep air bubbles to a minimum between the plastic and the gel; they may leave spots on the print. Always mark the item number on the gel lifter which corresponds with the shoe that was used to make the print, left or right.

9.2.5 Gelatin Rubber Lifts

The gelatin rubber lifters are used in the same manner as the transparent gelatin lifters. The known shoe sole can be inked or powdered (see Transparent Gelatin Lifters for procedure), then placed on the shoe iron. To get a full width representation of the shoe, it may be necessary to put two (or more as necessary) lifts side by side. The edge of the lift is stuck to the heel of the shoe and rolled, with an ink roller, the length of the shoe. The lift is then removed and the plastic protector cover is carefully placed over the lift. Be careful to minimize air bubbles or wrinkles between the plastic and the tape. Always mark the shoe from which the impression was made. The lift with or without the plastic protector can be processed via photography, a copier and/or a scanner.

9.2.5.1 Procedure

See 8.2.4.1

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU	
	TRACE EVIDENCE	
	FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1	
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08

9.2.6 Dental Stone

Dental stone is a material that can be used to obtain three-dimensional standards.

9.2.6.1 Procedure

See 7.3

9.2.7 Biofoam with Dental Stone

Biofoam is a material that can be used to obtain three-dimensional standards. This material is a fragile foam material that deforms under minimal pressure to conform to the shape of the shoe deforming it. It is usually used to take impressions of footwear. Once an impression has been made in the biofoam, a dental stone cast can be made of that impression. Take a biofoam container out and remove the lid. Make the impression by pressing the shoe into the biofoam or by putting the shoe on and stepping into the biofoam. Use as much pressure as needed for any given impression, avoid going through the bottom of the biofoam. Follow dental stone procedure (7.3).

9.3 Tire Test Print/Exemplar

The following information on the tire should be noted: size marking and serial/D.O.T. numbers

Examples of information to be collected from tires are:

- Size marking: P 19585 R 14
P=Passenger car tire, 195=section width in millimeters, 85=series (height to width ratio), R=Radial (B=bias belted, D=bias ply), 14=rim diameter in inches.
- Serial Numbers: DOT DBHL E65410
DOT=meets or exceeds the Dept. of Transportation Safety Standards, DB=Manufacturer code, HL=Tire size, E65=Group of symbols used by the manufacturer, 410=the date the tire was manufactured.

When making exemplars, reference points are marked on the tire that correlate on the test print/exemplar, and the direction of rotation is indicated on the test print/exemplar. The tire is labeled in a manner to identify the mounted position of the tire to the vehicle (e.g., front driver's side) and which side faces away from the vehicle. The marked tire is photographed along with the tire information and serial number. The tire, with the rim, should be collected, if possible. Additionally, exemplars should be marked with the following:

- Name of the personnel producing the tire test print/exemplar
- Which side of the track is the outside/inside
- Which tire the test print/exemplar is from
- If wheel base or track width information was collected (at a crime scene), then you should compare the information with one collected from the vehicle itself. The conditions for the measurements should be the same. Due to surface characteristics of the road, the measurements may vary.

013217

013217



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

9.3.1 Paper Medium

Assorted poster papers of various size, thickness and color used with a powdered, inked or lubricated tire will provide a quality print that can be used to make a transparency copy. The floor surface needs to be as smooth and clean as possible. A hard and smooth material backing can be used if a smooth and clean floor is not located. The tires can be inked, ink rolled or coated with lubricant such as petroleum jelly, Vaseline, wax, etc. To ink the tread, permanent ink of a contrasting color, usually black, is applied to a large ink pad and the tire is rolled to contact the ink pad onto the recording medium. To lubricate the tire, a dab of the lubricant is rubbed on the tread prior to making a direct contact onto the poster papers, making sure to get the entire circumference of each tire. The poster papers are then dusted with magna/black powder. The use of butcher paper and Styrofoam are discouraged due to the possible distortion of the print. After the print is made on the recording medium, a "fixer" such as a non-aerosol hair/lacquer spray is applied onto the shoe print to protect the print. Once the "fixer" is dried the poster sheets are folded for storage. Two dimensional exemplars can be made in a similar fashion to footwear. The exemplar is then dusted with black magna brush powder.

9.3.2 Transparent Sheet

A roll of transparent sheet with a thickness of approximately 4 millimeters used with an inked or lubricated tire will provide a quality print that can be used as a transparency. The floor surface needs to be as smooth and clean as possible. The tire can be inked or coated with lubricant such as petroleum jelly, Vaseline, wax, etc. To ink the tread, permanent ink of a contrasting color, usually black, is applied to a large ink pad and the tire is rolled to contact the ink pad onto the poster papers. To lubricate the tire, a dab of the lubricant is rubbed on the tread prior to making a direct contact onto the poster papers, making sure to get the entire circumference of each tire. The transparent sheet is then dusted with magna/black powder. A "fixer" such as a non-aerosol hair spray is applied onto the shoe print to protect the print. Once the "fixer" is dried, the transparent sheet is rolled up for storage.

9.3.3 Sand

Three-dimensional track exemplars are prepared by having the tire or wheel make an impression in sand, and the subsequent impression photographed and/or cast for comparison purposes.



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Gniffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

10.0 SICAR with Solemate and Treadmate database

SICAR is computer software that can be used to perform searches on database of known footwear and tires (SOLEMATE and TREADMATE). The searches provide candidate lists of possible outsole or tread designs, thus providing a manufacturer's brand name, allowing the reporting of possible brands of footwear or tire for investigative leads for law enforcement agencies. Particular unknown images of footwear or tires from crime scenes may be added and searched against known standards in the database.

11.0 Comparisons

There are three types of footwear/tire characteristics utilized for comparison between questioned patterns and footwear/tire. These are class characteristics, wear characteristics and individual characteristics. The examination of the above features is conducted by visual inspection and by comparison of test impressions with a questioned pattern.

- Side-By-Side Method

The test impression or exemplar is placed alongside the questioned pattern and compared side-by-side with measurements of features being the same.

- Superimposed Method

The exemplar is superimposed onto the photograph of the questioned pattern. This test impression, which is transparent, may also be placed on top of the questioned pattern after it has been adequately photographed. However, this approach can only be done with relatively rugged questioned patterns.

- Other Comparison Considerations


To conclude that a questioned pattern originated from a particular footwear/tire (positive identification), class characteristics must be the same, with no inexplicable inconsistencies, and a significant number of corresponding individualizing characteristics must be present in both the test print/impression and the questioned pattern. Additionally, the outsole/tread must be examined to ensure that the features are present and appear to be that of individualizing or accidental characteristics. Certain manufacturing defects can appear to be individual in nature, but may repeat themselves on any footwear/tire made from the same mold. Furthermore, wear characteristics should be similar. However, this depends on how soon after the commission of the crime the footwear/tire was obtained. Exclusions can be made based on dissimilar class characteristics, individual characteristics and wear characteristics. Again, however, one must be extremely careful when excluding the shoe/tire on the basis of wear characteristics since this can change dramatically in a short period of time. Additionally, fine individualizing characteristics that are present in a shoe/tire may not be reproducible in questioned patterns. Fine features tend to become filled with fluid, e.g., blood, and not consistently appear in questioned patterns. They can also change considerably depending, again, on how long after the commission of the crime the footwear/tire is obtained.

ALL PRINTED COPIES ARE UNCONTROLLED

Page 14 of 21

013219

013219

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU	
	TRACE EVIDENCE	
FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1		
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #. 1 (first as stand-alone document) Effective: 8/26/08

12.0 Recommended verbiage:

Positive Identification:

The footwear/tire (Item #) was identified as having made the (questioned) footwear/tire (Item #).

Exclusionary:

The footwear/tire (Item #) was excluded as having made the (questioned) footwear/tire (Item #). Item #__ was excluded from having made the (questioned) footwear/tire observed on or in Item #__ due to having dissimilar tread pattern/design.

Non Positive Identification or Exclusion:

The footwear/tire (Item #) can produce shoe prints/impressions/tire tracks similar in tread pattern to the (questioned) footwear/tire tracks (Item #). However, no individual characteristics were observed, therefore precluding a specific identification or exclusion.

Item #__ exhibits a __ tread pattern similar to the footwear/tire in Item #__. Therefore, the footwear/tire could have made the (questioned) prints/impressions. However, due to the limited clarity of the (questioned) prints/impressions, a more detailed examination was precluded.

The shoe/tire (Item #__) shares similar tread pattern/design with the (questioned) shoe/tire on or in the photographs, gelatin lifts, casts etc. (Item #__). However due to the lack of sufficient detail, absence of a shoe/tire test prints and/or proper scale, a more conclusive association was not made.

The shoe/tire (Item #__) shares general tread pattern/design with the (questioned) shoe/tire on or in the photographs, gelatin lifts, casts etc. (Item #__). However, the details which would indicate that this print/impression was not made by the shoe/tire are not sufficiently clear.

There was insufficient detail on or in Item#__ or the photographs, gelatin lifts, casts etc. (Item #__), therefore, precluding a footwear/tire examination.

Request for known samples:

If footwear comparison is needed, submit the known shoes or call the undersigned prior to submitting known shoes.

SICAR/Reference Search was positive:


The Shoeprint Image Capture and Retrieval (SICAR) database was used to determine that the shoe's outsole on Item #__ is consistent with (manufacture/brand/model) shoes. It should be noted that this database search does not necessarily include all shoes having these observed patterns.

ALL PRINTED COPIES ARE UNCONTROLLED

Page 15 of 21

013220

013220

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU	
	TRACE EVIDENCE	
	FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1	
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08

SICAR/Reference Search was negative:

The manufacturer of the questioned (footwear/tire) impression could not be determined at this time.

No addition informational (manufacture/brand/model) was obtained with the (questioned) prints/impressions using the Shoeprint Image Capture and Retrieval (SICAR) database. It should be noted that this database search does not necessarily include all shoes having these observed patterns.

The shoe/tire prints/impressions that are submitted via email:

The email is printed-out with appropriate case numbers along with associated images. The submitting agency should provide the agency name, agency case # and name and phone number of requester. The requestor may indicate prints/impressions to be searched, however, the examiner performing the search is given the discretion to perform the search as they see fit. The examiner will determine if the print/impression is of sufficient value for examination purposes.

Photographs/items retained:

The photographs/items were retained at the Arizona Department of Public Safety, Central Regional Crime Laboratory.

13.0 Minimum Standards and Controls

Photographs, lifts, tape lifts, casts, photographic negatives, evidence items and/or evidence sub-items will contain the following minimum information:

- Laboratory Case Number.
- Initials of the examiner.
- Item number and sub item designation, if given, of the article from which the impression was preserved, or under which the exhibit was submitted.
- One-to-One format photographs will include a measurement scale


Brushes:

- A wide variety of types, shapes, and sizes of brushes are available for processing evidence with powders. The total supply of different kinds of brushes required depends on the types of brushes and colors of powders used. An ample number of appropriate brushes will help to preclude cross-contamination of powders and brushes.
- Feather Brush: Generally used for delicate processing purposes involving the removal of excess powder or soot and fluorescent powders. Feather brushes are not as durable as other types and must be handled with greater care.
- Fiberglass Brush: Consists of fine fiberglass bristles and is used by many examiners as an all-purpose brush in lieu of several other sizes and types. The primary advantage is the ability to process a large area with considerably less "re-powdering" of the brush than other types.

ALL PRINTED COPIES ARE UNCONTROLLED	Page 16 of 21
-------------------------------------	---------------

013221

013221

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU		
	TRACE EVIDENCE		
	FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1		
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08	

These brushes are more expensive than hair or feather brushes, but often last longer than either type.

- Carbon Filament: Similar to fiberglass brush, used to remove excess powder. Does not hold powder well.
- Animal Hair Brush: When used, these brushes should be very soft and pliable and are appropriate for all powders except magnetic. Stiff bristles can damage prints, usually by causing light or dark streaks in the print. Commercially produced latent print hair brushes are most often made from camel hair or squirrel hair.
- Magnetic Brush (Wand): These wands are used only for the application of magnetic type powders (or mixtures of magnetic/conventional powders). In that the "bristles" involved consist of the magnetic powder itself, the applicator head of the wand will not wear out. One magnetic wand will suffice for many colors of powder.

Chemical Processes:


- Reagent Solutions will be kept in a designated area in stock containers labeled with the type of solution, preparer's initials, and date prepared.
- All chemicals will have an MSDS on file.
- All chemicals required for technical processing will be stored in accordance with the MSDS for that chemical.
- These chemicals will be marked with expiration dates, as appropriate, and disposed of in accordance with MSDS standards.
- Minimum standards and controls for specific chemical preparations are in the Reagent Notebook with each formula.
- Exact chemical concentrations are critical to analyses in some forensic sciences; however, the chemicals used to merely visualize impression detail for comparison purposes are not as critical. They do not alter the types of characteristics present or change their relative positions. A slightly weaker or stronger solution than usually employed may differ slightly from the norm in contrast produced, but as long as detail is discernible, an identification may be effected.
- Working solutions of standards not specifically noted will be tested against a surface bearing a known impression or a test strip after the reagent is mixed. Documentation of the test impressions must be done in the case notes at a minimum.

Powder processes:

- Many commercially produced latent print "dusting" powders are available and many are very similar from company to company.
- Commercial stock containers should be used to refill latent print powder containers for daily use.
- Individual hair (or fiber) brushes should be used for different colors or types of powders.
- Contaminated powders should not be returned to the stock containers, but discarded appropriately.
- Magnetic/conventional powder mixtures may be replenished by periodic addition of conventional (non-magnetic) powder to produce a 50/50 ratio.

013222

013222

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU TRACE EVIDENCE FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1		
Originally Adopted: 6/27/97 as Section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08	

Preservation of Impressions:

- All suitable impressions will be photographed prior to the application of any processing technique.
- In those instances when all suspects have been identified, the examiner has the option to photographically preserve only those identified impressions. This may be limited to one impression for each suspect identification. The remaining unidentified impressions may be photographically preserved at the discretion of the examiner.
- At least one method of preservation must be used for each non-duplicate suitable impression developed. Photographic prints will be checked against the original exhibits for sharpness, contrast and accurate reproduction of detail.

Control (Possession) of Lifts, Photographs, and Negatives after a Case Has Been Completed:

- All lifts, photographs and negatives received from an outside agency will be returned to the submitting agency or the agency listed on the evidence receipt.
- All lifts made of impressions, developed by the Laboratory on items of evidence, will be returned to the submitting agency.
- One-to-one photographs used in a comparison can be kept in the laboratory evidence storage area.
- Submitted negatives and/or CD-ROMs containing digital images will be returned to the submitting agency in the same packaging with the evidence.

Lifting Materials:

- Lifting materials for shoe prints consist primarily of gelatin or adhesive-coated materials. The background color of the opaque lifting medium is dependent upon the color of the impression to be lifted.
- Caution must be exercised in utilizing general-purpose tapes (book-binding, etc.) in place of specialized print lifting tape or lifts. The reason being that a thick adhesive emulsion base can cause the migration and disappearance of details (especially with some light colored powders) either immediately or over a period of days or weeks.

The following is a list of recommended tapes and lifts for latent print preservation:

Rubber Lifts:

- Available in black or white with transparent covers, the primary advantage is the ability to lift shoe prints from curved surfaces without the creases inherent to tape lifts. A disadvantage is that the detail must be photographically (or optically as with a prism/mirror viewer) reversed to enable comparison with known prints/impressions. Rubber lifts are also available in sizes appropriate for lifting entire prints.


Tape/Adhesive Lifts:

- Special latent print lifting tape, both transparent and frosted is available from several commercial sources. They enable direct comparison with known prints/impressions and can be

ALL PRINTED COPIES ARE UNCONTROLLED	Page 18 of 21
--	---------------

013223

013223

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU	
	TRACE EVIDENCE	
	FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1	
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08

used with a wide variety of black or white backing materials, including pre-printed backing cards, index cards, photographic papers, and vinyl backing tabs.

Electrostatic Lifter:

- The electrostatic units must be sufficiently charged prior to use. The lifting film must be free of dust and other contaminants prior to use. The re-using of the lifting film for the recovery of evidence is discouraged.

Magnifying Glasses:

- Fine quality magnifying glasses are essential for comparison. Usual magnification is approximately 4.5 times.
- Headband mounted magnifying glasses are useful during certain processing and examination procedures. These units are commercially available through various vendors and leave both hands free while the examiner manipulates a surface that cannot be placed "under" a conventional fingerprint magnifier.
- Magnifying glasses should be cleaned with commercially available window/lens cleaner. No caustic chemicals should be applied to the lens.


Light Source and Computer Image Processors:

- There are commercially available light sources and computer image processors available for any needs described in this manual.
- Maintenance of all such equipment should be in accordance with manufacturer's recommendations.

ALL PRINTED COPIES ARE UNCONTROLLED	Page 19 of 21
-------------------------------------	---------------

013224

013224

	ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU	
	TRACE EVIDENCE	
	FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1	
Originally Adopted: 6/27/97 as section in FA/TM 6/27/97	Issuing Authority: Todd A. Griffith, Superintendent	Revision #: 1 (first as stand-alone document) Effective: 8/26/08

14.0 References

Abbott, J. R. Footwear Evidence: Charles C. Thomas: Springfield, IL, 1964
 Blood"; Journal of Forensic Identification, 1989, 39, 1, 23-32.
 Bodziak, W.J. *Footwear Impression Evidence*, 2nd ed.; CRC Press: Boca Raton, FL, 2000
 British Home Office. "Chemical Development and Intensification of Sweat and Blood Marks, Etc."; May 1981.
 Cassidy, M.J Footwear Identification: Public Relations Branch of the Royal Canadian Mounted Police: 1980 (Reprinted by Lightning Powder Company, Inc. 1995)
 Hamm, E., "Locating an Area on a Suspect Tire for Comparative Examination to a Questioned Track", 38th Annual Meeting, AAFS, Louisiana, 1986, pp. 1-10.
 International Association for Identification (IAI) Recommended Course of Study for Footwear & Tire Track Examiners: Mendota Heights, MN, 1995.
 Kent, Terry, ed. *Fingerprint Development Techniques*; Heanor Gate Publisher: Derbyshire, England, 1993.
 Lee, Henry C.; Gaensslen, R. E., eds. *Advances in Fingerprint Technology*; Elsevier Science Publishers, NY, 1991.
 McCarthy, Mary M.; David L. Grieve. "Preprocessing with Cyanoacrylate Ester Fuming for Fingerprint Impressions in
 McDonald, P., *Tire Imprint Evidence*, CRC Press: Boca Raton, FL, 1992
 Nause, L.A., "Tire Impression as Evidence", RCMP Gazette, Vol. 44, No. 12 (1982), pp. 10-27.
 Norkus, P.; Kevin Noppinger. "New Reagent For The Enhancement Of Blood Prints"; Identification News, 1986, 26, 4, 5 & 15.
 SHOEPRINT IMAGE CAPTURE AND RETRIEVAL (SICAR)
 Tire Design Guide (yearly), Tire Design Guides, Inc., Boca Raton, Florida.

ALL PRINTED COPIES ARE UNCONTROLLED	Page 20 of 21
-------------------------------------	---------------

013225

013225



ARIZONA DEPARTMENT OF PUBLIC SAFETY SCIENTIFIC ANALYSIS BUREAU
TRACE EVIDENCE

FOOTWEAR and TIRE TRACK ANALYTICAL PROTOCOL – FWTT2008.1

Originally Adopted: 6/27/97
as section in FA/TM 6/27/97

Issuing Authority:
Todd A. Griffith, Superintendent

Revision #: 1 (first as stand-alone document)
Effective: 8/26/08

15.0 Revision History

Revision History of Footwear and Tire Track Analytical Protocol

Section(s) of Protocol Revised	Date	Issuing Authority
Removed from Firearm Protocol and established as a stand alone document. Full revision.	8/26/08	Todd A. Griffith

ALL PRINTED COPIES ARE UNCONTROLLED

Page 21 of 21

013226

013226